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Question 1.2.1: Have others used sectionalizing, special protection systems, etc. to accommodate new renewable generation?

Sectionalized self-build substations to enable renewable generation integration

Several renewable generation projects with the connection solutions that entails sectionalisation of transmission lines were allocated preferred bidder status following the Bid Window 5 of the competitive energy procurement programme. The new transmission substations required to enable these connections are shown below:

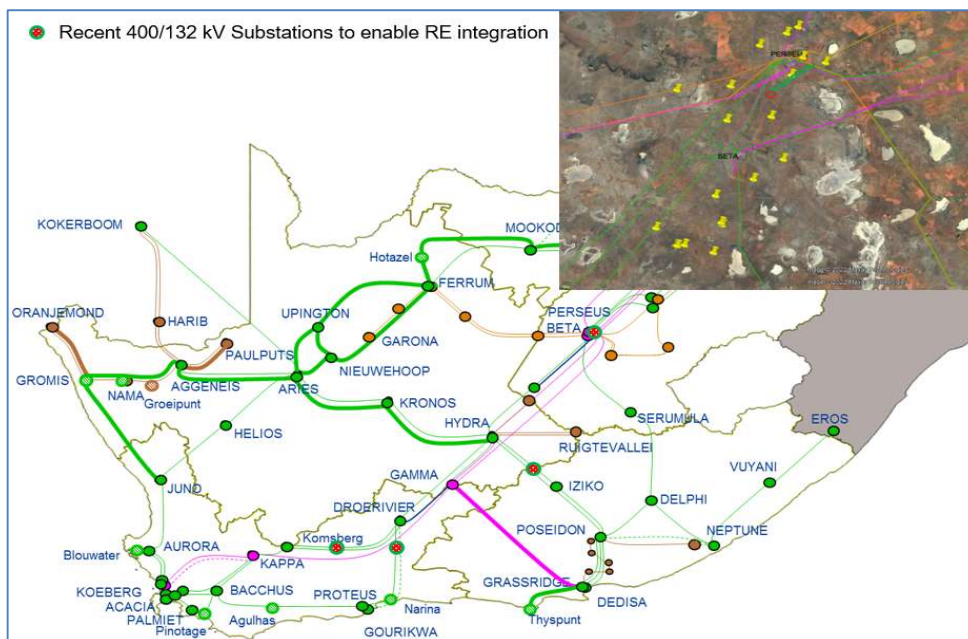


Figure 1: Network development required to enable the preferred bidder self-build RE projects

One of the main challenges in the South African context is that all the projects concerned are constructed by the IPP developers under a Self-build agreement and handed over to the transmission network service provider for ownership and operation. This gives rise to disputes when the project costs increase due to additional network studies and resultant scope creep (series capacitor resizing, protections review requirements etc). The other main challenges are the congestion and dependency of future renewable generation projects on the infrastructure that is developed by a separate developer, due to the fast pace of grid integration needs by various projects.

Opportunities

There are already several planned projects that will result in sectionalisation of the transmission lines to enable future IPP connections. The expected complete removal of licensing threshold for embedded generation is expected to result in significantly large renewable generation projects, which will necessitate more sectionalisation of the transmission lines as potentially the only connection enabling solution, amid the challenges for speedy development of the transmission network. Thus, a need for early scoping and accurate costing, as well fostering closer relations between the transmission network service provider and prospective developers is a vital enabler for these projects.